

WBS 1.8 Staged Schedule

Staged Trigger Construction Plan

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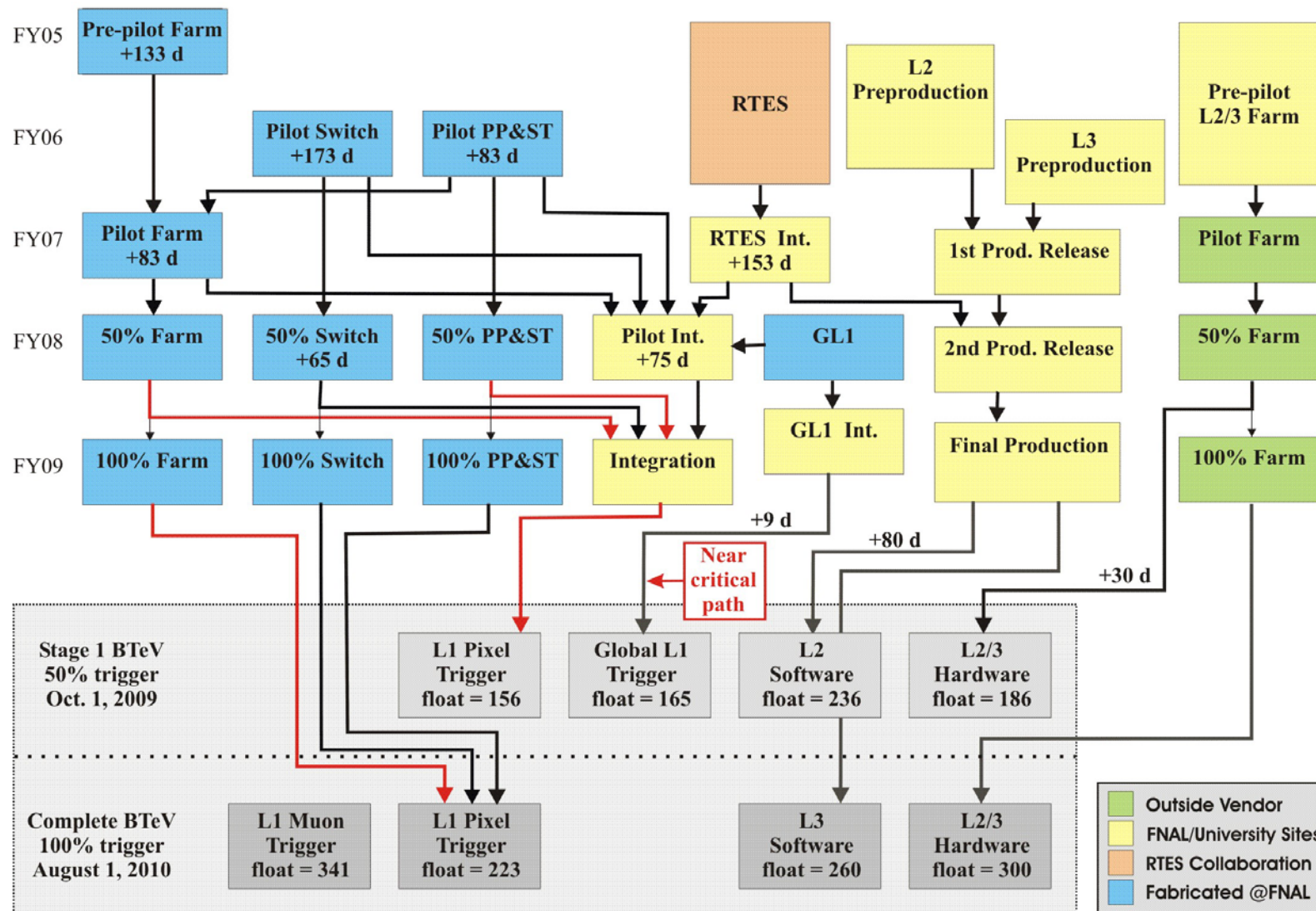
- Stage I detector – 50% trigger system
 - Need-by date: October 1, 2009
 - Ready by February 23, 2009 (7 months of float)
 - 50% of L1 pixel trigger hardware (100% of L1 software)
 - 100% of Global Level 1 (GL1) hardware and software
 - 50% of L2/3 trigger hardware
 - Final production release of L2 trigger software
 - Second production release of L3 trigger software
- Complete detector – 100% trigger system
 - Need-by date: August 1, 2010
 - Ready by September 8, 2009 (10.5 months of float)
 - Remaining 50% of L1 and L2/3 trigger hardware
 - 100% of L1 muon trigger
 - Final production release of L3 trigger software

What needed to change for WBS 1.8?

- Earlier start for L2 software development, so that software is completed almost 12 months before the need-by date. This requires 146K\$ more for labor in FY05.
- Construction of two trigger highways moved from FY09 to FY08, requiring a shift of 2M\$ from FY09 to FY08.
- Introduce additional float in the schedule for the L1 Pilot System (one highway). This requires a shift in funding of more than 400K\$ from FY07 to FY06.

	FY05	FY06	FY07	FY08	FY09
CD-1	637K	2,150K	2,651K	4,506K	7,103K
Staged	783K	2,571K	2,230K	6,618K	4,972K
Net Change	146K	421K	(421)K	2,112K	(2,131K)

WBS 1.8 Project Flow Diagram

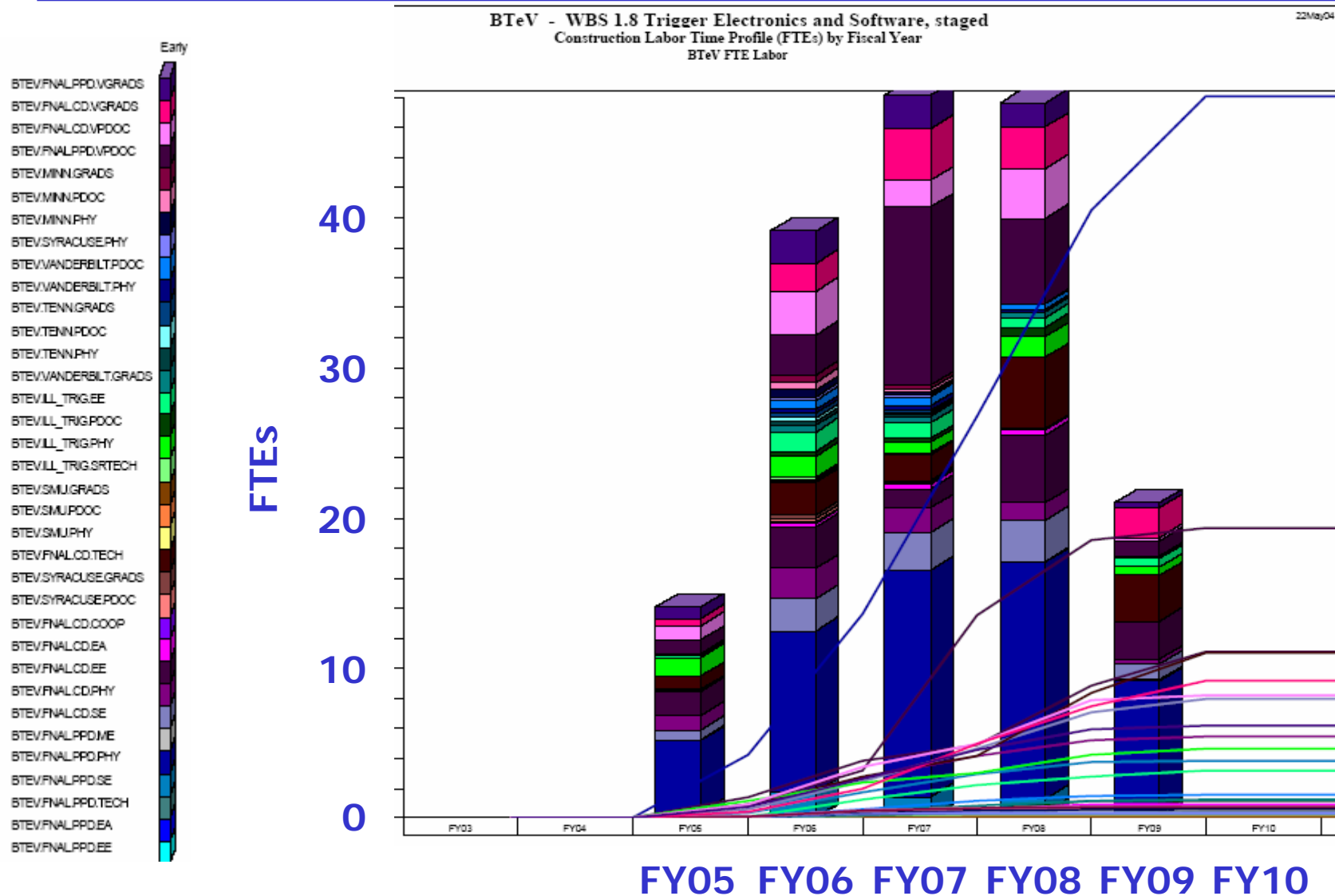


- Stage I detector – 50% trigger system
 - The critical path for WBS 1.8 is the fabrication, testing and integration of four L1 pixel-trigger highways. The critical path has 156 workdays of float.
 - A near-critical path (with an additional 9 workdays of float) is the fabrication, testing and integration of the GL1 trigger, which uses the same processing hardware as the L1 pixel trigger.
- Complete detector – 100% trigger system
 - The critical path for the 100% trigger system is the fabrication, testing and integration of the remaining four L1 pixel trigger farms with 223 workdays of float.

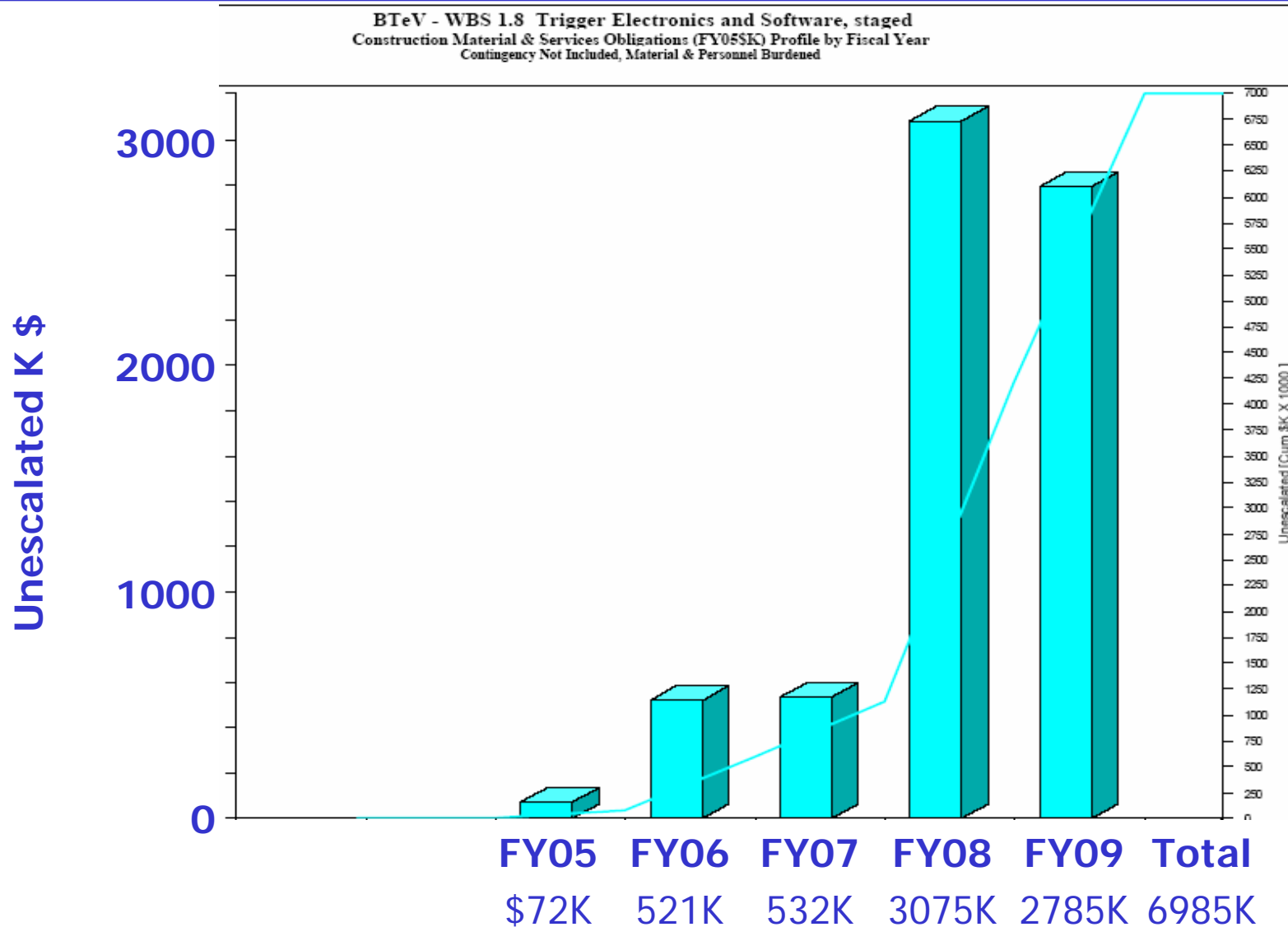
WBS 1.8 Construction Cost

Activity ID	Activity Name	Base Cost (\$)	Material Contingency (%)	Labor Contingency (%)	Total FY05	Total FY06	Total FY07	Total FY08	Total FY09	Total FY05-09
1.8.1	L1 Hardware & Software	7,515,289	32	33	471,742	1,428,245	1,080,605	4,233,133	2,744,333	9,958,059
1.8.2	L2/L3 Hardware & Software	4,227,880	34	89	212,360	1,041,803	1,049,699	2,285,622	2,133,344	6,722,829
1.8.3	Trigger Electronics & SW Subproj Mgmt	401,262	16	24	99,285	100,867	99,681	99,681	94,538	494,052
1.8	Subproject 1.8	12,144,431	33	53	783,388	2,570,916	2,229,985	6,618,435	4,972,216	17,174,940

WBS 1.8 Labor Profile



WBS 1.8 M&S Obligation Profile



- Develop a schedule which (a) completes critical design and validation activities as soon as possible and is ready for production six to nine months in advance of the production start date, and (b) completes production of the trigger and data acquisition systems six to nine months in advance of first collisions.
 - We have developed a schedule that completes 50% of the L1 trigger seven months before the need-by date for the Stage 1 detector, and completes 50% of the L2/3 trigger more than eight months before the need-by date.
 - Critical design and validation activities have been an ongoing effort, and we will complete an L1 Pilot system 14 months before the start of production.
- Re-evaluate the basis of estimate of the FPGA costs to allow for uncertainty in the de-escalation profile.
 - We will evaluate our FPGA costs, and will probably adopt the same approach that is being considered for WBS 1.9 (balancing between increasing performance and decreasing price).
- Quickly identify and apply new individuals and groups to provide the physicist effort for by the WBS.
 - We have started to identify new individuals and groups.

Summary

- We have developed a schedule for WBS 1.8 that completes 50% of the L1 trigger and 50% of the L2/3 trigger with at least seven months of float for the Stage 1 detector.
- The changes in the funding profile are shown in the table:

	FY05	FY06	FY07	FY08	FY09
CD-1	637K	2,150K	2,651K	4,506K	7,103K
Staged	783K	2,571K	2,230K	6,618K	4,972K
Net Change	146K	421K	(421)K	2,112K	(2,131K)

- In accordance with our new schedule, we need to make our first M&S procurements in February, 2005.